

## **NEPHROGENIC SYSTEMIC FIBROSIS AND OMNISCAN: PART 1.**

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Gadolinium (Gd) based intravenous magnetic resonance imaging (MRI) contrast agents have recently been associated with the multisystemic fibrosing disorder known as nephrogenic systemic fibrosis (NSF) or nephrogenic fibrosing dermopathy (NFD). Transmetallation between the Gd of the contrast agent and the endogenously available copper (Cu) or zinc (Zn) cations is believed to play a role. During this process, the Gd which is normally complexed to a ligand (L), is replaced by one or more cations ( $M^{+n}$ ) as described by:  $GdL + M^{+n} \leftrightarrow M_mL^{(mn-3)} + Gd^{+3}$ . This reaction is of concern because it can deplete  $M^{+n}$  from the body while depositing  $Gd^{+3}$  in bone or liver. Studies have shown an increased Cu and Zn excretion in urine after the use of certain contrast agents. It is unclear if this increase is attributed to direct transmetallation with the Gd, complexation with other materials in the agent, or a multi-step process in which Gd becomes bound to bone leaving a free ligand to complex with  $M^{+n}$ . This presentation summarizes an approach to studying the interaction of a specific contrast agent called Omniscan® (GE Healthcare) and specific transition metal ions.